

Another paper by the same authors⁴ describes some experiments made to test the effects of desiccation on vitality of seeds. The seeds of grains and grasses will withstand drying to less than 1 per cent without material loss in germination. Blue grass and Johnson grass can even be dried to 0.1 per cent of moisture without loss in germination, but vigor is greatly reduced in the blue grass. Still further loss of vigor occurred in the blue grass when dried in vacuo at 100° C. for 6 hours, but the germination percentage was not materially reduced. These results negative the statements of EWART that excessive drying changes dormant protoplasm to such an extent that the essential molecular groupings cannot be re-established under conditions for germination.—C. A. SHULL.

Curing timber.—A method of drying timber more uniformly to avoid cracks and shakes in the logs is proposed by STONE.⁵ The method is based upon assumptions as to the natural movement of sap in trees which will not meet with favor among plant physiologists. He considers that the water is held in the saturated tracheal walls, evaporates from these walls into continuous vapor-filled lumina, and moves upward through the tubes in response to a partial vacuum produced above by transpiration. Indeed, the water is supposed to travel upward mostly by night, because at that time the leaves are much cooler than the trunk, and would condense the vapor from the tubes, thus filling the cells as reservoirs against the next day's transpiration. Salts are imagined to travel through the cell walls of the tracheae rather than in the transpiration stream, which is nonexistent in STONE's assumption. It is hard to imagine a conception much more at variance with experimental results of physiological studies.

The actual drying plant suggested is a closed shed, arranged with a cooler at one end, the purpose of which is to condense the moisture as it leaves the logs, in the form of hoar frost, on the principle of the dew pond. Thus the air of the shed will be kept continually dry, and cold dry air constantly circulating through and around the porous logs. He asserts that this would dry each annual layer simultaneously, and that the shrinkage would be regular and occur without cracking. Whether the proposed plant would really result in the uniform curing of timber the reviewer must leave to the practical forester. Perhaps the suggestion is much sounder on the practical side than the assumptions on which it is based would seem to indicate.—C. A. SHULL.

Philippine plant diseases.—REINKING⁶ has published an excellent and very useful account of the economic plant diseases of the Philippines, which

⁴ HARRINGTON, G. T., and CROCKER, WM., Resistance of seeds to desiccation. *Jour. Agric. Research* 14:525-532. 1918.

⁵ STONE, HERBERT, The ascent of the sap and the drying of timber. *Quart. Jour. Forestry* 12:261-266. 1918.

⁶ REINKING, OTTO A., Philippine economic plant diseases. *Philipp. Jour. Sci.* 13:165-274. *pls. 20. figs. 43.* 1918.